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**F2E ES E2H9B**  
**U1S S1827**

(56) Documents cited  
**GB 2242655 A US 4809818 A**

(58) Field of search  
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 INT CL<sup>5</sup> **B62D, F16D**  
 Online databases: **WPI**

**(54) A braking mechanism in a collapsible wheeled structure**

(57) A braking mechanism in a wheeled structure which is collapsible along an axis and is provided with at least two spaced wheels 11, each having a brake 10 and being mounted on that axis, incorporates a brake operating member which is movable between two stable positions in which the brakes are applied and are released respectively, and the operating member comprises an extendible bar having at least two members 41, 42 slidable relative to one another by means of cooperating surfaces along said axis operatively to connect the bar to the brakes in all states of collapse of the structure. Where the wheels have limited swivelling action, the bar is appropriately connected to each brake.

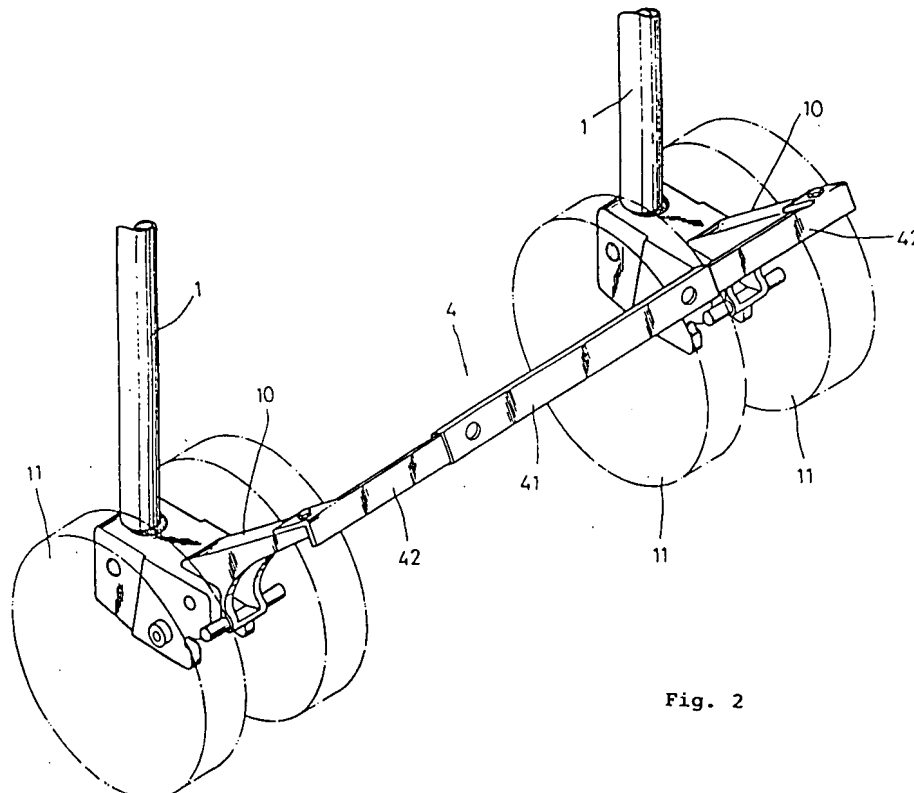


Fig. 2

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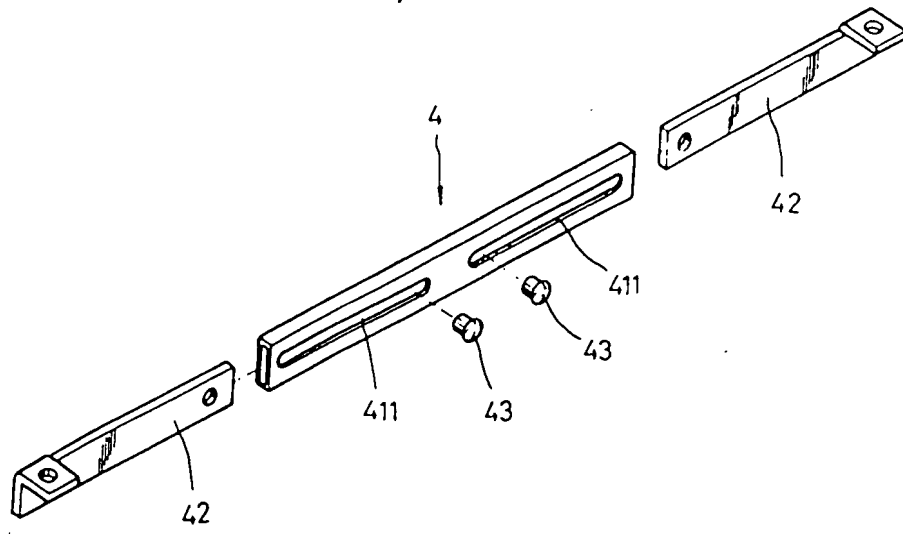


Fig. 1

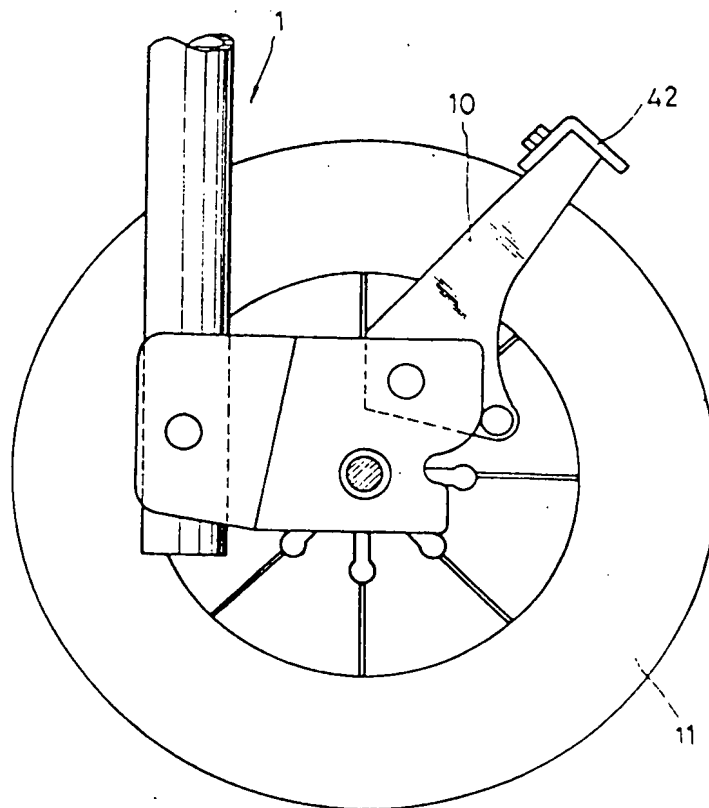


Fig. 3

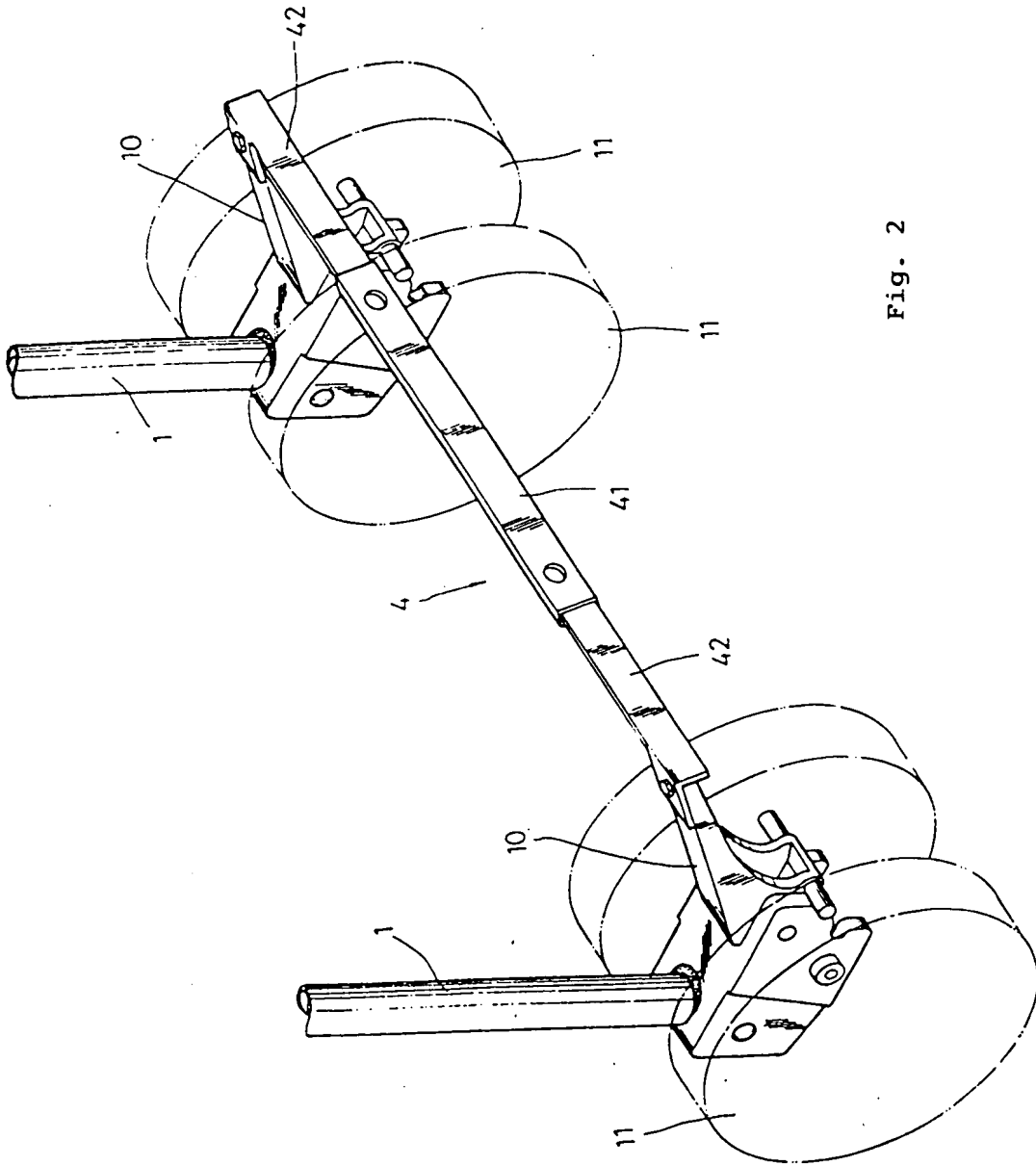


Fig. 2

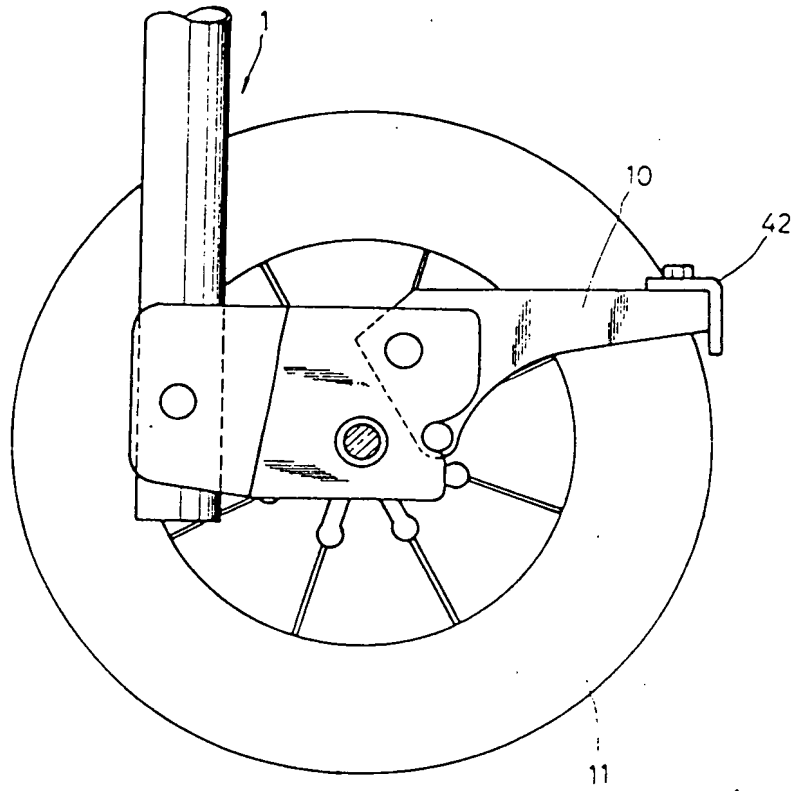


Fig. 4

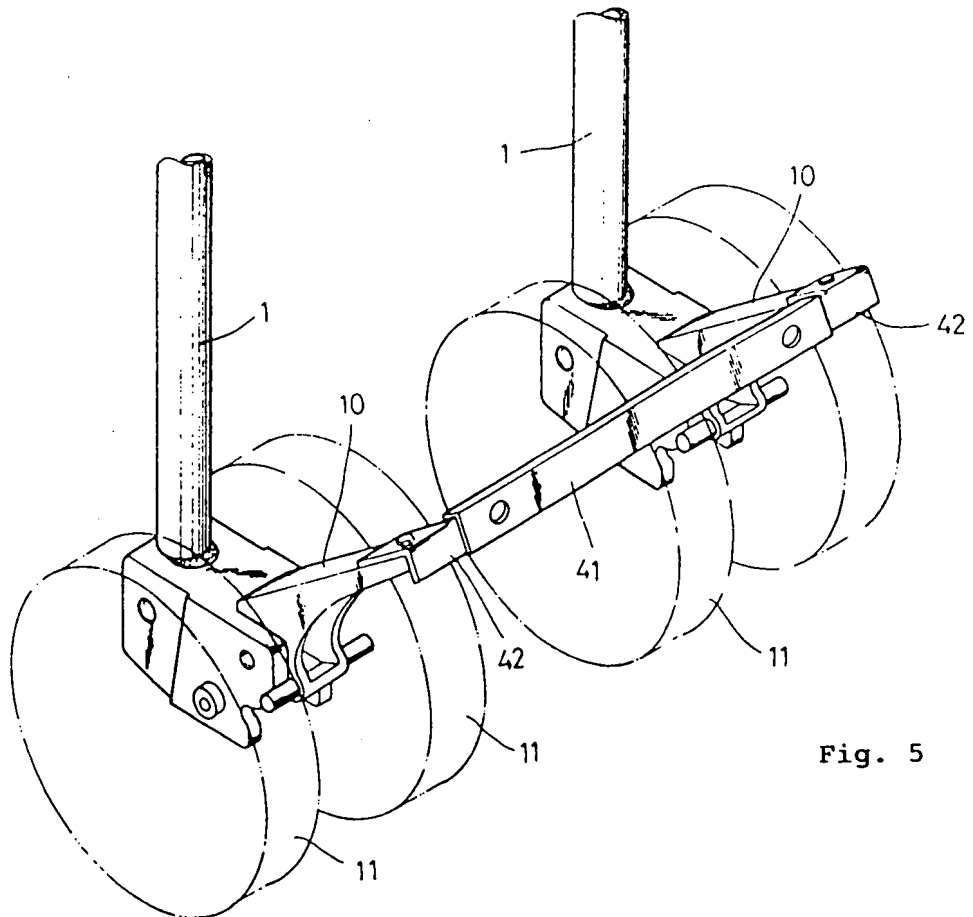


Fig. 5

IMPROVED BRAKING MECHANISM

This invention relates to a braking mechanism as incorporated in a collapsible wheeled structure.

More specifically, this invention relates to a  
5 braking mechanism for use in a child's pushchair,  
particularly for use in bi-directionally folding  
pushchairs.

The term "braking mechanism" is used herein to  
include mechanisms which physically lock wheels against  
10 rotation as well as mechanisms which frictionally resist  
such rotation.

For safety, if the brakes on a pushchair cannot be  
made to act on both rear wheels then the rolling axis of  
the front wheels must be fixed. However, if both rear  
15 wheels can be braked together the front wheels may be  
allowed to swivel. Similarly, the same applies to front  
braking pushchairs.

Folding pushchairs may be separated into two  
categories, either unidirectionally or bi-directionally  
20 folding types. The unidirectional type has a relatively  
large bulk when folded and is therefore inconvenient to  
carry.

In a known unidirectionally folding pushchair the  
relative spacing of the two rear wheels remains fixed,  
25 enabling a bar to be fitted between the rear wheel  
brakes. Depression of this bar enables both wheels to be  
braked simultaneously. However, in the bi-directionally  
folding type, the relative spacing of the two rear wheels  
is changed when the pushchair is folded to make it  
30 inconvenient to connect the brakes by a single rigid bar.

In a known bi-directionally folding pushchair the  
bar connecting the brakes folds in the centre to respond  
to the folding of the chair. However, in the braked  
state, the direction of folding is changed and it then  
35 cannot fold into its smallest state. Furthermore, the  
folding of this bar is rearwards which may cause injury  
and requires many simultaneous actions to reduce the

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pushchair to its collapsed state. The increased complexity of this second known braking device may cause difficulties in use and therefore it is an object of the present invention to reduce these difficulties.

5       According to the present invention, there is provided a braking mechanism as incorporated in a wheeled structure which is collapsible along an axis and is provided with at least two spaced wheels, each having a brake and being mounted on that axis, the spacing between  
10   the wheels being dictated by the state of collapse of the structure, the mechanism including a brake operating member which is movable between two stable positions in which the brakes are applied and are released respectively, wherein the brake operating member  
15   comprises an extendible bar whose opposite ends are connected to each brake, the bar having at least two members which slide relative to one another by means of cooperating surfaces along the said axis operatively to connect the bar to the brakes in all states of collapse  
20   of the structure.

Preferably the extendible bar may comprise one member slidable inside another member.

The extendible bar may comprise three elongate members, slidable along their substantially common axis.

25       The slidable members may be restrained within a range of extensions by a slot and pin connection.

In order that the invention may be more readily understood, reference will now be made, by way of example, to the accompanying drawings in which:-

30       FIGURE 1 is an exploded diagram of a braking mechanism of the present invention;

FIGURE 2 is a rear perspective view of the mechanism of Figure 1 in use;

35       FIGURE 3 is an end view of the mechanism showing the brake released;

FIGURE 4 is a similar view showing the brake applied, and

FIGURE 5 is a rear perspective view of the present mechanism in its retracted state.

Figure 1 shows an extendable bar (4) of the present invention, made up of an elongated sleeve section (41) and two symmetrical bar members (42). The sleeve (41) accommodates the two bar members (42) which are inserted in the two opposite ends of the sleeve (41), and which are retractable therein. Pins or studs (43) attached to the bar members (42) slide along channels (411) in the sleeve (41). Thus the two retractable bar members (42) may be extended outwards or retracted inwards from the sleeve (41) but cannot be detached therefrom. Figure 2 shows the bar (4) of Figure 1 in use where the outer ends of the bar members (42) are connected to the brakes (10) of the two rear wheels (11).

When the chair (1) is opened, the bar members (42) slide outwards from the sleeve (41), so that the bar assembly (4), extends accordingly. The brakes (10) may then easily be applied to both wheels (11) by depression of the bar (4) with the operator's foot.

Figures 3 and 4 respectively show one of the wheel brakes (10) both unbraked and braked.

Figure 5 shows a rear perspective view of the pushchair (1) when it is folded with the bar members (42) retracted into the sleeve (41) so that the length of the bar assembly (4) relates to the distance between the two rear wheels.

The described mechanism therefore meets the requirements for practical use in that the retractable bar conveniently and freely accommodates both the open and folded states of the chair and any intermediate state. Furthermore, opening and folding of the chair is possible in both the braked and unbraked states. This enables a child's pushchair to combine swivelling front wheels, bi-directional folding and the braking of the two rear wheels.

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Furthermore the rear wheels may, if desired, be mounted for limited swivelling action in which case the connection between the bar and each brake must be arranged to accommodate such swivel action.



Claims:

1. A braking mechanism as incorporated in a wheeled structure which is collapsible along an axis and is provided with at least two spaced wheels, each having a brake and being mounted on that axis, the spacing between the wheels being dictated by the state of collapse of the structure, the mechanism including a brake operating member which is movable between two stable positions in which the brakes are applied and are released respectively, wherein the brake operating member comprises an extendible bar whose opposite ends are connected to each brake, the bar having at least two members which slide relative to one another by means of cooperating surfaces along the said axis operatively to connect the bar to the brakes in all states of collapse of the structure.
2. A braking mechanism as claimed in claim 1, wherein the members comprise one member slidable inside another member.
3. A braking mechanism as claimed in claim 1, wherein the extendable bar comprises three elongate members, slidable along their substantially common axis by means of cooperating surfaces.
4. A braking mechanism as claimed in claim 3, wherein the two outer members are slidable inside the third member.
5. A braking mechanism as claimed in any one of claims 1 to 4, wherein the slidable members are restrained within a range of extensions by a slot and pin connection.
6. A braking mechanism as claimed in any preceding claim, wherein the two spaced wheels are mounted for limited swivel action and the connection between the bar and each brake is arranged to accommodate such swivel action.
7. A braking mechanism substantially as hereinbefore described with reference to Figures 3 to 7

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of the accompanying drawings.

**Patents Act 1977**  
**Examiner's report to the Comptroller under**  
**Section 17 (The Search Report)**

Application number

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**Relevant Technical fields**

(i) UK Cl (Edition K ) F2E (ES)

(ii) Int Cl (Edition 5 ) B62D; F16D

**Databases (see over)**

(i) UK Patent Office

(ii)  
ONLINE DATABASE: WPI

Search Examiner

P I SQUIRE

Date of Search

25 MARCH 1992

Documents considered relevant following a search in respect of claims

1 TO 7

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
A	GB 2242655 A (NICHOLS)	
A	US 4809818 (LEGGETT, PERDUE)	

SF2(p)

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Category	Identity of document and relevant passages	Relevant to claim(s)

**Categories of documents**

**X:** Document indicating lack of novelty or of inventive step.

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